

ORIGINAL ARTICLE

ROLES OF VITAMIN C AND VITAMIN E ON DOXORUBICIN-INDUCED RENAL AND LIVER TOXICITY IN RATS

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ABSTRACT

Introduction: Doxorubicin (DOX) is a chemotherapy agent that has potent effects against various cancer types. However, DOX may elicit renal and liver toxicity.

Objectives: To examine the role of vitamin C and vitamin E in reducing DOX renal and liver toxicity.

Methods: Male rats (220-330 g) were assigned to one of the treatment groups. Group I was healthy controls. Group II was given DOX (20 mg/kg b.wt). Group III was given vitamin C (250 mg/kg b.wt) for 7 days prior to DOX injection. Group IV was given vitamin E (250 mg/kg b.wt) for 7 days prior to DOX injection. Group V was given oil vehicle for 7 days prior to DOX injection.

Results: Vitamin C was effective to reduce both renal and liver dysfunction. However, vitamin E protective effects were only convincing in lowering DOX-induced renal toxicity but not liver toxicity. Both vitamins prevented elevated DOX-induced oxidative stress.

Conclusion: Both vitamin C and vitamin E can help to reduce DOX toxicity in rat kidney, but only vitamin C that has clear benefits on improving liver toxicity after DOX injection.

Keywords: Doxorubicin, renal toxicity, liver toxicity, vitamin E, vitamin C